PATENT

UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. 01-1008-A)

In re Application of:	
Malone et al.	**Examiner: Choi, Jacob Y.**
Serial No.: 10/054,173	**Group Art Unit: 2875**
Filed: January 18, 2002	**Confirmation No.: 4542**
For: Method for Vacuum Deposition of Circuitry Onto a Thermoplastic Material and a Vehicular Lamp Housing Incorporating The Same	

DECLARATION OF TODD NYKERK

Commissioner for Patents
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I, Todd Nykerk, hereby declare as follows:

1. I am an engineer employed by Meridian Autosystems, Inc. and one of the co-inventors named in the above-identified application

2. I have been working on developing lighting components for automobiles for 7 years.

3. I have reviewed the application, as well as the amendment after final, that is being submitted herewith. I have also reviewed the various references cited by the Examiner as the basis for rejecting the pending claims of this application, including Suzuki, Hancox, Forish, Harris, Crotzer and Longueville. In my view, neither the method

of manufacture of claim 1, or the product claimed in claim 16 would be obvious based on any of these references.

4. In my view, none of the cited references -- Suzuki, Hancox, Forish, Harris, Crotzer and Longueville – teach a person of ordinary skill in the art how to make or use a conductive layer that is 1 to 4 microns thick that is deposited directly onto the substrate of the lamp assembly. Such a conductive layer would not be obvious, in my view, or a mere "optimum value" of a "result effective variable" or "workable range" based on any of these references.

5. Suzuki teaches that the conductive layer must be part of a ""flat arranging material 28," a flexible print circuit or a flexible flat circuit, col. 4, lines 41-42. As shown in FIG. 3, and described at col. 4, lines 18-20, the flat arranging material 28 has three conductors formed on one side of a non-conductive surface. This "belt-like" flat arranging material 28 is then fixed within a concave groove 27 of the substrate, col. 4 lines 9-11. As such, the conductors do not come into direct contact with the lamp housing as called for by the claims. This process -- arranging the conductors on a belt like non-conductive material and affixing the belt-like material to the lamp housing – is much more complex and requires more steps that than directly affixing the conductors to the lamp housing. But Suzuki teaches away from the direct attachment of the conductors to the lamp housing.

6. Hancox teaches that the electrical contacts are to be made by "a cutting operation (e.g., piercing)" a single, preformed sheet substrate by heat deforming the substrate. *See* col. 4, lines 20-54. The cutting operation described in Hancox for making

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the preformed sheet could not be used to cut conductors that are 1-4 microns thick. Thus, Hancox teaches away from the use of a conductor within the claimed range.

7. Moreover, Hancox teaches that the electrically conductive elements are separate components that have apertures through which pass heat deformable spigots for attachment to the lamp assembly housing (body 10), col. 3, lines 59-69. Using such heat deformable spigots for attachment would damage a conductive layer that is only 1 to 4 microns thick, and thus one of ordinary skill in the art would not expect that a conductive layer 1-4 microns thick could be used in the configuration taught in Hancox.

8. Harris teaches that a conductor is first applied to a flexible printed circuit board 43, col. 2, lines 24-36, rather than directly to the lamp housing as called for by the current claims. Moreover, as shown in Fig. 1, the flexible printed circuit board 43 is not in contact with the lamp housing 12, but instead is disposed away from the housing, thus preventing the conductive layer, even if exposed, from coming into direct contact with the lamp housing. Thus, Harris teaches away from the claimed inventions, which call generally for the conductive layer to be deposited directly on the lamp housing.

9. Forish teaches the use of a sealed backplate assembly 60 which "includes the circuitry for electrically interconnecting the three lamp socket assemblies." Col. 4, lines 41-45. The electrical circuits are not deposited directly on the lamp substrate to form conductor 1-4 microns thick, but instead are "stamped from a thin sheet of electrically conductive material." Col. 6, lines 39-50. Forish explicitly teaches the advantage of stamping such conductors: "This stamping process produces rigid

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connectors in a relatively economic manner." Col. 6, lines 49-50. Such stamping processes, as taught by Forish, cannot be used to make a conductor 1-4 microns thick.

10. Moreover, Forish actually teaches away from the invention – Forish teaches that a rigid conductor must be used, but the extremely thin conductive layer of the instant invention would not, by definition, be rigid. Nor would a rigid conductor be deposited directly on the lamp substrate, as it would be difficult to ensure adequate conformity between the rigid conductor and the lamp substrate. Thus, Forish clearly teaches away from the invention.

11. In short, none of these references teaches, nor renders obvious, a conductive layer that is 1 to 4 microns thick that is deposited directly onto the lamp housing.

12. In my view, the heavier construction called for by these prior art references may have been considered appropriate given the rigorous handling and operation conditions of many lamp assemblies. They are often handled by consumers, or in repair shops under relatively rugged conditions. Moreover, many such lamp assemblies are used in vehicles, where they are constantly subject to significant wear and tear. A conductive layer of 1 to 4 microns deposited directly on the lamp substrate would not have been considered optimum in light of these conditions.

13. Moreover, a conductive layer that is pre-formed on a circuit board or in a flexible flat circuit involves very different manufacturing considerations and can be made under tighter tolerances than a conductive layer deposited directly on a lamp assembly substrate. Lamp assembly substrates require larger components, often contoured, which

make positioning and even distribution of conductive material more difficult, particularly where only 1 to 4 microns of conductive material is being deposited.

14. For all of these reasons, therefore, a conductive layer of 1 to 4 microns deposited directly on the lamp substrate is not simply selecting an optimum value of a result effective variable or a specified workable range, involving only routine skill.

15. The methods claimed in the above-identified application are also not, in my view, taught by the cited references, alone or in combination. None of the references teach the deposition of a conductive layer directly on a lamp housing where the conductive layer is 1-4 microns thick. In my view, the references generally teach away from such direct deposition of a conductive layer directly on a lamp housing.

16. As described above, Suzuki teaches that a non-conductive layer be interposed between the conductors and the lamp housing.

17. Hancox also teaches away from direct deposition of a conductive layer of 1-4 microns on a lamp housing. As described above, Hancox teaches that the conductive layer is to be cut, which would (i) preclude direct deposition of any conductive layer and (ii) preclude the use of a conductive layer that is 1-4 microns thick. Moreover, Hancox teaches, as shown in Fig. 3, that the conductive layer (e.g., 13, 18) is not deposited on the lamp housing 10, but is spaced apart from the lamp housing. In fact, were one to attempt to deposit particles by direct metallization to form a layer of conductive material on the side of the lamp housing 10 where the separate conductive layer is positioned in Hancox, it would be virtually impossible to form a circuit.

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18. Harris also teaches away from the direct deposition of a conductive layer 1-4 microns thick on the lamp housing. Instead, Harris teaches that a conductive layer must first be applied to a printed circuit board, which has conductive and nonconductive layers. Moreover, as shown by Fig. 1, the printed circuit board is not in direct contact with the lamp housing 12, except, possibly, at specific contact points.

19. Forish also teaches away from the invention. As described above, Forish teaches that the conductor is to be stamped out of a rigid sheet, not deposited by direct metallization. Moreover, the stamped conductor is placed in a backplate assembly, not attached directly to the lamp housing as called for by the claims.

20. Crotzer, first of all, teaches the manufacture of a circuit board, as opposed to a lamp assembly. Crotzer also teaches the "grafting" of an electrically conductive elastomer material to form circuits, col. 3, line 65 – col. 4, line 11, as opposed to deposition by direct metallization of the lamp housing. Such grafting techniques are much more costly and time-consuming than direct metallization. As such, Crotzer actually teaches away from direct-metallization of the lamp housing.

21. Similarly, Longueville refers to metal-coated materials only in describing the housing, which can then be used, according to the teaching, to provide a connection to ground to enhance shielding, Col. 9, lines 37-45. Providing a connection ground, as taught in Longueville, is a comparatively gross application. It does not require the precise distribution of deposited material required to provide electrical connections for electrical components such as the claimed light sources.

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22. In addition, I understand that new claim 35 adds the limitation that the layer of conductive material be 1-4 microns thick. For the reasons discussed above in connection with the apparatus claims, in my view, none of the cited references teach any methods for depositing particles by direct metallization to form a layer of conductive material 1-4 microns thick on a contoured surface of a lamp housing, as called for by this claim.

23. Thus, it is my opinion that none of the cited references teach the deposition of particles by direct metallization of a lamp housing, particularly a contoured surface of a lamp housing, as called for in the current claims. In short, none of the references teaches a lamp housing having a conductive layer, 1-4 microns thick, forming electrical circuits, deposited directly on the lamp housing. To the extent that any of the references are addressed to electrical circuits at all, they require either a much thicker (usually free-standing) conductive layer or require that the conductive layer be disposed within some sort of intermediate, non-conductive layer, that may then be attached to the lamp housing. Furthermore, none of the references teach the direct metallization of a lamp housing to form electrical circuits.

24. I hereby declare that all statements made herein of my own knowledge are true, that all statements made on information and belief are believed to be true. I understand that willful false statements and the like are punishable by fine or imprisonment or both (18 U.S.C. 1001).

Further the declarant sayeth not.

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